

--116. A printed wiring board-forming sheet comprising an insulating resin sheet

Sub 7
C3 having a through hole inserted and filled with a conductive metal chip of substantially the same shape as the hole.

117. The printed wiring board-forming sheet as claimed in claim 116, wherein a conductive material layer is formed on at least one surface of the insulating resin sheet having a through hole inserted and filled with a conductive metal chip, said conductive material layer and the conductive metal chip being connected electrically with each other.

118. The printed wiring board-forming sheet as claimed in claim 117, wherein the conductive material layer is formed by a foil of a metal or a metal-alloy or a wiring pattern.

119. The printed wiring board-forming sheet as claimed in claim 116, wherein the conductive metal chip is formed by punching at least one conductive metal sheet selected from the group consisting of a solder sheet, a solder plated metal sheet, a copper sheet and a copper alloy sheet.

Sub 7
C4 120. The printed wiring board-forming sheet as claimed in claim 116, wherein the insulating resin sheet is made of at least one selected from the group consisting of polyimide, polyester, polypropylene, polyphenylene sulfide, polyvinylidene chloride, Eval, glass epoxy and a BT resin.

121. The printed wiring board-forming sheet as claimed in claim 116, wherein the conductive metal chip inserted in the through hole of the insulating resin sheet is protruded from at least one surface of the resin sheet.

122. The printed wiring board-forming sheet as claimed in claim 121, wherein the conductive metal chip protruded from at least one surface of the resin sheet is electrically connected with a conductive material or wiring pattern of other printed wiring board.

123. A process for producing the printed wiring board-forming sheet as claimed in claim 116, wherein an insulating resin sheet with or without a conductive material sheet on at least one surface of the resin sheet, and a conductive metal sheet having a thickness the same as or larger than the resin sheet are placed in this order on a die hole provided in a metal mold followed by punching them with a punch in such way that a chip of the conductive metal to be formed by the punch is inserted and remains in the through hole formed in the resin sheet by the punch.

124. A process for producing the printed wiring board-forming sheet as claimed in claim 116, wherein an insulating resin sheet with or without a conductive material sheet on at least one surface of the resin sheet having a through hole, and a conductive metal sheet having a thickness the same as or larger than the resin sheet are placed in this order on a die hole provided in a metal mold followed by punching them with a punch of substantially the same size as the through hole and set over the position corresponding to the hole in such way that a chip of the conductive metal to be formed by the punch is inserted and remains in the through hole.

125. A multi-layered printed wiring board comprising plural printed wiring boards laminated through insulating adhesive layers and press-bonded together, wherein each of the printed wiring boards comprises an insulating resin sheet having a wiring pattern formed on at least one surface thereof and a conductive metal filled in a through hole of the
5 resin sheet, said conductive metal having such a protrusion at one or both ends thereof that passes through the hole and protrudes through the insulating adhesive layer from the aligned surface of the insulating resin sheet and the wiring pattern to connect the wiring pattern electrically with other wiring patterns of adjacent printed wiring boards.

126. A process for producing the multi-layered printed wiring board as claimed in claim 125, wherein plural printed wiring boards comprising an insulating resin sheet having a wiring pattern formed on at least one surface thereof and a conductive metal filled in a through hole of the resin sheet, said conductive metal having a protrusion at one or both ends
5 thereof are laminated through insulating adhesive layers followed by press-bonding together to allow the protrusion of the conductive metal passing through the hole and the insulating adhesive layer from the aligned surface of the insulating resin sheet and the wiring pattern to connect the wiring pattern electrically with other wiring patterns of adjacent printed wiring boards.

127. The printed wiring board-forming sheet as claimed in claim 117, wherein the conductive metal chip is formed by punching at least one conductive metal sheet selected from the group consisting of a solder sheet, a solder plated metal sheet, a copper sheet and a copper alloy sheet.

128. The printed wiring board-forming sheet as claimed in claim 117, wherein the insulating resin sheet is made of at least one selected from the group consisting of polyimide, polyester, polypropylene, polyphenylene sulfide, polyvinylidene chloride, Eval, glass epoxy and a BT resin.

129. The printed wiring board-forming sheet as claimed in claim 117, wherein the conductive metal chip inserted in the through hole of the insulating resin sheet is protruded from at least one surface of the resin sheet.

130. The printed wiring board-forming sheet as claimed in claim 129, wherein the conductive metal chip protruded from at least one surface of the resin sheet is electrically connected with a conductive material or wiring pattern of other printed wiring board.

131. A process for producing the printed wiring board-forming sheet as claimed in claim 117, wherein an insulating resin sheet with or without a conductive material sheet on at least one surface of the resin sheet, and a conductive metal sheet having a thickness the same as or larger than the resin sheet are placed in this order on a die hole provided in a metal mold followed by punching them with a punch in such way that a chip of the conductive metal to be formed by the punch is inserted and remains in the through hole formed in the resin sheet by the punch.

132. A process for producing the printed wiring board-forming sheet as claimed in claim 121, wherein an insulating resin sheet with or without a conductive material sheet on at least one surface of the resin sheet, and a conductive metal sheet having a thickness the

same as or larger than the resin sheet are placed in this order on a die hole provided in a
5 metal mold followed by punching them with a punch in such way that a chip of the
conductive metal to be formed by the punch is inserted and remains in the through hole
formed in the resin sheet by the punch.

133. A process for producing the printed wiring board-forming sheet as claimed
in claim 117, wherein an insulating resin sheet with or without a conductive material sheet
on at least one surface of the resin sheet having a through hole, and a conductive metal sheet
having a thickness the same as or larger than the resin sheet are placed in this order on a die
5 hole provided in a metal mold followed by punching them with a punch of substantially the
same size as the through hole and set over the position corresponding to the hole in such way
that a chip of the conductive metal to be formed by the punch is inserted and remains in the
through hole.

134. A process for producing the printed wiring board-forming sheet as claimed
in claim 121, wherein an insulating resin sheet with or without a conductive material sheet
on at least one surface of the resin sheet having a through hole, and a conductive metal sheet
having a thickness the same as or larger than the resin sheet are placed in this order on a die
5 hole provided in a metal mold followed by punching them with a punch of substantially the
same size as the through hole and set over the position corresponding to the hole in such way
that a chip of the conductive metal to be formed by the punch is inserted and remains in the
through hole.--
